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EXAMINER

WILLIAMS, KEVIN D

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/813,937
Filing Date: March 31, 2004
Appellant(s): PITZ ET AL.

MAILED

APR 05 2007

GROUP 2800

Davidson, Davidson & Kappel
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/9/2006 appealing from the Office action mailed 5/3/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after non-final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 2004/0189769	WILBUR	9-2004
US 2003/0066452	JUNG	4-2003

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US 5,668,584	BRODER	9-1997
US 6,401,358	BAR	6-2002
US 2003/0071863	DOBERENZ	4-2003
US 5,115,741	RODI	5-1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilbur (US 2004/0189769) in view of Jung (US 2003/0066452).

Wilbur teaches a method for drying a printing ink on a printing substrate in a printing device comprising the steps of using at least one printing ink to print 16 on the printing substrate at a first position of a path, the printing substrate being moved along the path through the printing device, applying a treatment agent (heat applied directly to medium before printing; [0039]; clm. 39) at a second position of the path on the printing substrate to accelerate drying of the printing ink on the printing substrate, the applying of the treatment agent at the second position occurring before the printing at the first

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position (clm. 39), the substrate being dried by a radiant energy [0039] at a chronologically later point in time from the using and applying steps at at least one third position of the path.

Wilbur discloses an ink jet printing device and therefore does not disclose the method of printing in a printing press.

Jung discloses a method of printing in a printing press including radiant energy devices used for drying the printed ink.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wilbur to have the drying arrangement in a printing press as taught by Jung, in order to increase the speed at which the printed ink dries.

- Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung (US 2003/0066452) in view of Broder (US 5,668,584).

Jung teaches a method for drying a printing ink on a printing substrate in a printing press comprising the steps of using at least one printing ink to print on the printing substrate at a first position (Fig. 1) of a path, the printing substrate being moved along the path through the printing press (Fig. 1), the substrate being dried by the action of radiant energy 8 at a chronologically later point in time from the using step at at least one third position of the path.

Jung does not teach applying a treatment agent at a second position of the path on the printing substrate to accelerate drying of the printing ink on the printing substrate, and the applying of the treatment agent at the second position occurring before the printing at the first position.

Broder teaches a printing device having the step of applying a treatment agent (convective heat applied directly to medium before printing; col. 3, lines 52-54; col. 6, lines 9-12) at a second position of a path on the printing substrate to accelerate drying of the printing ink on the printing substrate, where the application of the treatment agent at the second position occurs before the printing at the first position (col. 6, lines 9-12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jung to preheat the printing substrate as taught by Jung, in order to increase the speed at which the printed ink dries.

- Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung (US 2003/0066452) in view of Bär (US 6,401,358).

Jung teaches a printing device comprising at least one printing unit I at a first position along a path of a printing substrate through the printing device, at least one drying device 8 at a third position along the path downstream from the print unit for supplying energy to the printing substrate, wherein at one further second position upstream from the drying device, the printing press includes a conditioning apparatus for applying a treatment agent 7 accelerating drying of the printing ink on the printing substrate at the third position, where the conditioning apparatus is designed to allow an application of the treatment agent from both sides onto the printing substrate (Fig. 2).

Jung does not describe the drying device and therefore does not teach the drying device including at least one narrow-band radiant energy source emitting light of one wavelength in the near infrared region.

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Bär teaches a drying device including at least one narrow-band radiant energy source emitting light of one wavelength in the near infrared region (col. 2, lines 54-62).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Jung to have the drying device as taught by Bär, in order to increase the drying speed of the printed ink.

- Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doberenz (US 2003/0071863) in view of Jung (US 2003/0066452).

Doberenz teaches a method for drying a printing ink on a printing substrate in a printing device comprising the steps of using at least one printing ink to print on the printing substrate at a first position of a path, applying a treatment agent [0028] at a second position of the path on the printing substrate to accelerate drying of the printing ink on the printing substrate, the applying of the treatment agent at the second position occurring before the printing at the first position [0028].

Doberenz does not disclose the method of printing in a printing press, the printing substrate being moved along the path through the printing device, where the treatment agent includes a siccative solution, an alkaline solution, or a binding agent.

Jung discloses a method of printing in a printing press (Fig. 1), a printing substrate being moved along a path through the printing device (Fig. 1), including a device used for drying the printed ink, where the treatment agent includes a siccative solution, an alkaline solution, or a binding agent (inherently includes a binding agent to bind the mixture).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Doberenz to have the drying arrangement in a printing press as taught by Jung, in order to increase the speed at which the printed ink dries.

- Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung in view of Bär as applied to claims 9 and 10 above and further in view of Rodi (US 5,115,741).

Jung in view of Bär teaches the claimed invention and a heating device 8, but does not provide a discussion of the particular type of heating device used, therefore Jung does not expressly disclose the printing substrate being dried by action of a radiant energy source in the form of a laser light source, the laser light source being a semiconductor laser, a gas laser, or a solid-state laser, the light incident to the printing substrate at one position being controllable in its intensity and exposure duration for each radiant energy source independently of the other radiant energy sources, the drying device having a plurality of radiant energy sources arranged in a one-dimensional field, a two-dimensional field, or a three-dimensional field with light striking the printing substrate at a number of positions, and a drying device including at least two radiant energy sources and the light from at least two radiant energy sources being incident to the printing substrate at one position.

Rodi teaches a printing substrate being dried by action of radiant energy in the form of a laser light source 15 and emitting light of one wavelength in the near infrared region, the laser light source being a semiconductor laser, a gas laser, or a solid-state laser 15, the drying device having a plurality of radiant energy sources (Fig. 3; 15)

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arranged in a one-dimensional field, a two-dimensional field, or a three-dimensional (fig. 3) field with light striking the printing substrate at a number of positions, the light incident to the printing substrate at one position being controllable in its intensity and exposure duration for each radiant energy source independently of the other radiant energy sources (col. 5, lines 12-20), and the drying device including at least two radiant energy sources and the light from at least two radiant energy sources being incident to the printing substrate at one position (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to additionally modify Jung to have the radiant energy device as taught by Rodi, in order to provide sufficient heat to the printed substrate to effectively dry the printed ink.

(10) Response to Arguments

Rejections under 35 U.S.C. 103 over Wilbur in view of Jung

Claim 1 is rejected under 35 U.S.C. 103 as being unpatentable over Wilbur in view of Jung. The first point of contention is whether Wilbur teaches the step of "applying a treatment agent...on the printing substrate to accelerate drying of the printing ink." Wilbur discloses a process of heating a sheet with radiant energy prior to printing in order to accelerate drying of the printing ink. See paragraph [0040], lines 15-19 and claim 39. Appellant contends that radiant heat is not a treatment agent applied on a substrate as recited in claim 1. The examiner respectfully disagrees.

Dictionary.com defines the term "agent" as "a force or substance that causes change."

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The term “force is defined as “the capacity to do work or cause physical change; energy.” Heat in any form has the capacity to cause physical change. For instance, heat causes materials to expand. Moreover, heat is a form of energy (see the dictionary.com printout in the file). The examiner contends that heat is a force that causes change and is therefore a treatment agent according to the language of claim 1.

Appellant also argues that the language “application of a treatment agent...on the printing substrate” means that a physical substance is deposited on the printing substrate. See page 9, lines 23-26 of Appellant’s brief. In essence, Appellant contends that the limitation of a “physical substance” should be read into the recited claim language “treatment agent.” The examiner respectfully disagrees. It is the examiner’s position that the claim language “application of” does not require the deposition of a substance; and the claim language “treatment agent” does not require a physical substance. The examiner contends that the process of heating a printing substrate, as in Wilbur, is a treatment agent applied on a printing substrate. Heat can cause change to the structure of the printing substrate and is therefore a form of energy applied on the printing substrate.

The second point of contention is whether there is motivation to combine Jung with Wilbur. Appellant argues that since Wilbur refers to inkjet printing and Jung refers to offset printing, there is no motivation to combine teachings in the references. Wilbur and Jung are both concerned with drying printed ink. Sufficiently drying printed images so that the images do not smear is a problem common to both inkjet and offset printing.

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One of ordinary skill in the art would clearly be motivated to look to any reference that contemplates methods of drying printed ink, irrespective of the method of printing.

Claim 4 is rejected under 35 U.S.C. 103 as being unpatentable over Wilbur in view of Jung. Appellant argues that Wilbur does not disclose drying the substrate by "radiant energy at a chronologically later point in time from the using and applying steps." The examiner respectfully disagrees. Wilbur discloses a radiant energy source 68a,68b that heats the printing substrate before printing and then continues to heat the substrate after printing. See paragraph [0039], lines 6-8 and paragraph [0040], lines 15-19. Heating the substrate before printing aids in drying the ink and reduces the amount of time required to dry the ink with the radiant source after printing.

Rejections under 35 U.S.C. 103 over Jung in view of Broder

Claim 1 is rejected under 35 U.S.C. 103 as being unpatentable over Jung in view of Broder. The first point of contention is whether Broder teaches the step of "applying a treatment agent...on the printing substrate to accelerate drying of the printing ink." Broder discloses a process of heating a sheet with convective heat energy prior to printing in order to accelerate drying of the printing ink. See column 3, lines 52-54 and column 6, lines 9-12. Appellant contends that convective heat energy is not a treatment agent applied on a substrate as recited in claim 1. The examiner respectfully disagrees. It is the examiner's position that convective heat energy is a treatment agent as recited in claim 1 for the same reasons described above with reference to radiant heat energy. See the arguments above with respect to claim 1 rejected under 35 U.S.C. 103 as unpatentable over Wilbur in view of Jung.

The second point of contention is whether there is motivation to combine Jung with Broder. Appellant argues that since Broder refers to inkjet printing and Jung refers to offset printing, there is no motivation to combine teachings in the references. Broder and Jung are both concerned with drying printed ink. Sufficiently drying printed images so that the images do not smear is a problem common to both inkjet and offset printing. One of ordinary skill in the art would clearly be motivated to look to any reference that contemplates methods of drying printed ink, irrespective of the method of printing.

Claim 4 is rejected under 35 U.S.C. 103 as being unpatentable over Jung in view of Broder. Although Appellant states that claim 4 is argued separately, Appellant does not provide arguments rebutting the rejection of claim 4. See page 11, lines 22-24 of Appellant's Brief. The examiner contends that the rejection of claim 4 is proper. Broder discloses a radiant energy source that heats the printing substrate after printing. See column 6, lines 14-16.

Rejections under 35 U.S.C. 103 over Jung in view of Bar

Claims 9 and 10 are rejected under 35 U.S.C. 103 as being unpatentable over Jung in view of Bär. Appellant argues that Bär does not teach a "narrow-band radiant energy source emitting light of one wavelength in the near infrared region." The examiner respectfully disagrees. First, Bär discloses a narrow-band radiant energy source. See column 2, lines 55-58 of Bär. Appellant's specification discloses a particular narrow-band source. See paragraph [0029] of Appellant's specification where Appellant discloses that the radiation source of the instant invention operates in the narrow range of 50nm. Appellant, however, does not specifically define the term

“narrow-band” with a particular wavelength range in the claims. Appellant’s specification also discloses that the source has a wavelength emission maximum between 700nm and 3000nm. Bär discloses a radiation source that has a wavelength emission maximum of 0.8 to 2.0 μm (800nm to 2000nm). Bär does not specifically state the band of wavelengths in which the device operates. However, even if the device in Bär operates over the entire range of 0.0nm to 2000nm, this range would still be considered a narrow band, since in the current state of the art a 2000nm range is considered a narrow band.

Second, Bär discloses a source emitting light of one wavelength. The radiant energy source in Bär operates to dry printed ink. It is apparent that the energy source emits radiation for at least one second in order to dry the ink. Considering the speed of light and a wavelength range of 0.8 to 2.0 μm , it is clear that the energy source of Bär emits light having at least one wavelength. See column 2, lines 55-57.

Finally, Bär discloses a source operating in the near infrared region. Bär states that the radiation source has an intensity maximum in the near infrared. See column 2, lines 55-57.

Rejections under 35 U.S.C. 103 over Doberenz in view of Jung

Claim 1 is rejected under 35 U.S.C. 103 as being unpatentable over Doberenz in view of Jung. Appellant argues that it is not clear from Doberenz that the chemical does not contact the ink in the air or before printing. The examiner respectfully disagrees. The examiner contends that the chemical is dispersed onto the printing substrate before the ink contacts the substrate. It is clear that the chemical does not contact the ink in

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the air or before the ink contacts the printing substrate since Doberenz discloses that the chemical can be dispersed from a spray bottle or pre-treated wipe. It would be impossible for the ink to contact a pre-treated wipe in the air before it lands on the printing substrate. Therefore, Doberenz teaches the application of a treatment agent on the printing substrate before printing. See paragraph [0028].

Appellant also argues that Doberenz does not teach "the printing substrate being moved along the path through the printing press" since the pen printer of Doberenz moves and the printing substrate is stationary. The examiner wishes to point out that the rejection relies on secondary reference Jung for this teaching. Jung discloses a printing press in which a printing substrate is moved along a path through the print press. See Jung, paragraph [0014], lines 6-10.

Appellant argues that there is no motivation to combine the pen-based printing system of Doberenz with the printing device of Jung. The examiner respectfully disagrees. Doberenz discloses a chemical that is used to accelerate the drying time of ink. One of ordinary skill in the art would clearly be inclined to combine this teaching with any type of printing device in which time must be allowed for drying the ink.

Claim 5 is rejected under 35 U.S.C. 103 as being unpatentable over Doberenz in view of Jung. Appellant argues that Jung does not disclose a treatment agent having a binding agent. The examiner respectfully disagrees. Jung teaches a treatment agent applied on a printing substrate after printing and used to accelerate the drying time of the ink. Jung discloses that the treatment agent is a mixture. See paragraph [0027]. It

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is the examiner's position that the mixture inherently includes a binding agent to bind the mixture.

Rejections under 35 U.S.C. 103 over Jung in view of Bar and further in view of Rodi

Claims 12-16 are rejected under 35 U.S.C. 103 as being unpatentable over Jung in view of Bär and further in view of Rodi. Appellant argues that there is no motivation to combine Rodi with Jung or Bär. Appellant explains that Rodi discloses a radiation device generating wavelengths in the ultraviolet (UV) range and thus teaches away from Bär which discloses generation of wavelengths in the near infrared region. The examiner contends that there is sufficient motivation to combine Rodi with Bär. The examiner wishes to point out that the rejection does not rely on the particular wavelength range generated by the radiation source in Rodi, but rather the provision of lasers. Rodi discloses that lasers are advantageous for several reasons. For instance, lasers produce a very confined beam which makes it possible to only heat those portions of the sheet carrying images. See column 3, lines 15-22.

The Rodi invention contemplates the use of UV inks and therefore discloses a preference for generating radiation having wavelengths lying in the UV range. However, Rodi discloses that the wavelength of the radiation should be adjusted according to the type of ink used. See column 5, lines 58-63. One of ordinary skill in the art would recognize that lasers can operate in the near infrared region and that the lasers should be adjusted to operate in that range when utilizing inks that respond to radiation in that range, such as the device in Bär.

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Claims 14-16 are rejected under 35 U.S.C. 103 as being unpatentable over Jung in view of Bär and further in view of Rodi. Appellant argues that there is no motivation to combine Rodi with Jung. Rodi discloses that lasers are advantageous for several reasons. For instance, lasers produce a very confined beam which makes it possible to only heat those portions of the sheet carrying images. See column 3, lines 15-22. In view of this teaching, one of ordinary skill in that art would be inclined to combine Rodi with Jung.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Kevin Williams



March 29, 2007

Conferees:

Judy Nguyen



Ricky Mack

